RAW SEQUENCE LISTING

The Biotechnology Systems Branch of the Scientific and Technical Information Center (STIC) no errors detected.

Application Serial Number: _____ 10/534,279

Source: _____ PCT

Date Processed by STIC: _____ 05/23/2006

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PCT

RAW SEQUENCE LISTING   DATE: 05/23/2006
PATENT APPLICATION: US/10/534,279   TIME: 14:03:58

Input Set : A:\60290-USA Sequence Listing.txt
Output Set: N:\CRF4\05232006\J534279.raw

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     3 <110> APPLICANT: Wu, Shilan
     4        Hayashi, Jon H.
     5        Kinne, Lyle P.
     6        Dierks, Peter M.
     8 <120> TITLE OF INVENTION: Lepidoptera Voltage-Gated Calcium Channels
    10 <130> FILE REFERENCE: FMC 60290
C-->12 <140> CURRENT APPLICATION NUMBER: US/10/534,279
C-->12 <141> CURRENT FILING DATE: 2005-05-06
    12 <160> NUMBER OF SEQ ID NOS: 83
    14 <170> SOFTWARE: PatentIn version 3.2
    16 <210> SEQ ID NO: 1
    17 <211> LENGTH: 5047
    18 <212> TYPE: DNA
    19 <213> ORGANISM: Heliothis virescens
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195 <212> TYPE: PRT
196 <213> ORGANISM: Heliothis virescens
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205             20                  25                  30
208 Glu Trp Pro Pro Phe Glu Tyr Ala Val Leu Leu Thr Ile Ile Ala Asn
209         35                  40                  45
212 Cys Val Val Leu Ala Leu Glu Glu His Leu Pro Asn Gly Asp Lys Thr
213     50                  55                  60
216 Ile Leu Ala Gln Asn Leu Glu Lys Thr Glu Ala Tyr Phe Leu Gly Ile
217 65                  70                  75                  80
220 Phe Cys Val Glu Ala Ser Leu Lys Ile Leu Ala Leu Gly Phe Val Leu
221             85                  90                  95
224 His Arg Gly Ser Tyr Leu Arg Asn Val Trp Asn Ile Met Asp Phe Phe
225             100                 105                 110
228 Val Val Val Thr Gly Ile Ile Thr Gln Leu Pro Ile Ala Pro Ala Asp
229             115                 120                 125
232 Val Asp Phe Arg Thr Leu Arg Ala Ile Arg Val Leu Arg Pro Leu Lys
233     130                 135                 140
236 Leu Val Ser Gly Val Pro Ser Leu Gln Val Val Leu Lys Ser Ile Ile
237 145                 150                 155                 160
240 Lys Ala Met Ala Pro Leu Leu Gln Ile Gly Leu Leu Val Leu Phe Ala
241             165                 170                 175
244 Ile Val Ile Phe Ala Ile Ile Gly Leu Glu Phe Tyr Ser Gly Ala Leu
245             180                 185                 190
248 His Lys Thr Cys Tyr Asn Leu Glu Asp Ile Ser Glu Ile Val Asn Glu
249             195                 200                 205
252 Gly Asp Ser Ala Thr Pro Cys Asn Ala Asp Asn Val Ser Leu Ala Pro
253     210                 215                 220
256 Phe Gly Ala Asn Val Cys Asp Tyr Glu Lys Ser Thr Cys Leu Glu Lys
257 225                 230                 235                 240
260 Trp Glu Gly Pro Asn Arg Gly Ile Thr Ser Phe Asp Asn Ile Gly Phe
261             245                 250                 255
264 Ala Met Leu Thr Val Phe Gln Cys Ile Thr Met Glu Gly Trp Thr Ala
265             260                 265                 270
268 Ile Leu Tyr Trp Thr Asn Asp Ala Leu Gly Ser Ala Phe Asn Trp Ile
269         275                 280                 285
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272 Tyr Phe Val Pro Leu Ile Val Leu Gly Ser Phe Phe Met Leu Asn Leu
273     290             295             300
276 Val Leu Gly Val Leu Ser Gly Glu Phe Ala Lys Glu Arg Glu Lys Val
277 305             310             315             320
280 Glu Asn Arg Gln Glu Phe Leu Lys Leu Arg Arg Gln Gln Gln Leu Glu
281             325             330             335
284 Arg Glu Leu Asn Gly Tyr Val Glu Trp Ile Cys Lys Ala Glu Glu Val
285             340             345             350
288 Ile Leu Ala Glu Glu Arg Thr Thr Glu Glu Glu Lys Met His Ile Ile
289         355             360             365
292 Glu Ala Arg Arg Arg Ala Ala Ala Lys Lys Lys Leu Lys Asn Leu Gly
293     370             375             380
296 Lys Ser Lys Ser Thr Asp Thr Glu Glu Glu Glu Gln Asp Glu Asp Cys
297 385             390             395             400
300 Gly Asp Asp Gly Phe Leu Lys Ser Lys Ala Arg Ser Ala Gly Arg Phe
301             405             410             415
304 Ala Asp Phe Trp Arg Ala Glu Lys Arg Phe Arg Phe Trp Ile Arg His
305             420             425             430
308 Thr Val Lys Thr Gln Trp Phe Tyr Trp Phe Val Ile Val Leu Val Leu
309         435             440             445
312 Phe Asn Thr Ile Cys Val Ala Val Glu His Tyr Arg Gln Pro Lys Trp
313     450             455             460
316 Leu Thr Ser Phe Leu Tyr Tyr Ala Glu Phe Val Phe Leu Gly Leu Phe
317 465             470             475             480
320 Met Met Glu Met Trp Val Lys Met Tyr Ala Leu Gly Pro Arg Ile Tyr
321             485             490             495
324 Phe Glu Ser Ser Phe Asn Arg Phe Asp Cys Val Val Ile Ser Gly Ser
325         500             505             510
328 Ile Phe Glu Val Val Trp Ser Glu Val Lys Gly Gly Ser Phe Gly Leu
329     515             520             525
332 Ser Val Leu Arg Ala Leu Arg Leu Leu Arg Ile Phe Lys Val Thr Lys
333     530             535             540
336 Tyr Trp Ser Ser Leu Arg Asn Leu Val Ile Ser Leu Leu Asn Ser Met
337 545             550             555             560
340 Arg Ser Ile Ile Ser Leu Leu Phe Leu Leu Phe Leu Phe Ile Leu Ile
341             565             570             575
344 Phe Ala Leu Leu Gly Met Gln Leu Phe Gly Gly Gln Phe Asn Phe Glu
345             580             585             590
348 Asp Gly Thr Pro Pro Thr Asn Phe Asn Thr Phe Pro Ile Ala Leu Leu
349             595             600             605
352 Thr Val Phe Gln Ile Leu Thr Gly Glu Asp Trp Asn Glu Val Met Tyr
353     610             615             620
356 Asp Gly Ile Gln Ser Gln Gly Gly Ile Gln Arg Gly Met Ile Tyr Ser
357 625             630             635             640
360 Leu Tyr Phe Val Ile Leu Val Leu Phe Gly Asn Tyr Thr Leu Leu Asn
361             645             650             655
364 Val Phe Leu Ala Ile Ala Val Asp Asn Leu Ala Asn Ala Gln Glu Leu
365             660             665             670
368 Thr Ala Ala Glu Glu Glu Gln Val Glu Glu Asp Lys Glu Lys Gln Leu
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RAW SEQUENCE LISTING   DATE: 05/23/2006
PATENT APPLICATION: US/10/534,279   · TIME: 14:03:58

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373          690                   695                   700
376 Pro Pro Gly Val Asp Leu Ser Pro Ser Ser Pro Thr Ser Arg Lys Asn
377 705                   710                   715                   720
380 Lys Lys Lys Glu Glu Ala Lys Lys Glu Asp Glu Asp Glu Val Pro Asp
381                   725  .                730                   735
384 Gly Pro Lys Pro Met Leu Pro Tyr Ser Ser Met Phe Ile Leu Ser Pro
385                   740                   745                   750
388 Thr Asn Pro Ile Arg Arg Gly Ala His Trp Val Val Asn Leu Arg Tyr
389          755  .                760                   765
392 Phe Asp Phe Phe Ile Met Val Val Ile Cys Met Ser Ser Ala Ala Leu
393          770                   775                   780
396 Ala Ala Glu Asp Pro Val Val Glu Glu Ser Asp Arg Asn Lys Ile Leu
397 785                   790                   795                   800
400 Asn Tyr Phe Asp Tyr Ala Phe Thr Gly Val Phe Thr Val Glu Met Leu
401                   805                   810                   815
404 Leu Lys Ile Val Asp Leu Gly Ile Leu Phe His Pro Gly Ala Tyr Leu
405                   820                   825                   830
408 Arg Asp Leu Trp Asn Ile Met Asp Ala Ala Val Val Ile Cys Ala Leu
409          835                   840                   845
412 Val Ser Phe Gly Phe Glu Ile Gly Gly Val Lys Lys Gly Ala Gly Gln
413          850                   855                   860
416 Asn Leu Ser Thr Ile Lys Ser Leu Arg Val Leu Arg Val Leu Arg Pro
417 865                   870                   875                   880
420 Leu Lys Thr Ile Lys Arg Val Pro Lys Leu Lys Ala Val Phe Asp Cys
421                   885                   890  ·                895
424 Val Val Asn Ser Leu Lys Asn Val Ile Asn Ile Leu Ile Val Tyr Ile
425                   900                   905                   910
428 Leu Phe Gln Phe Ile Phe Ala Val Ile Ala Val Gln Leu Phe Asn Gly
429          915                   920                   925
432 Lys Phe Phe His Cys Asn Asp Ile Ser Lys Asn Thr Phe Glu Asp Cys
433          930                   935                   940
436 Gln Gly Ser Tyr Phe Val Tyr Glu Ser Asn Ser Leu Leu Pro Lys Val
437 945                   950                   955                   960
440 Asn Gln Arg Thr Trp Thr Thr Gln Ser Phe His Tyr Asp Asn Val Ala
441                   965                   970                   975
444 Val Ala Met Leu Thr Leu Phe Ala Val Gln Thr Gly Glu Gly Trp Pro
445                   980                   985                   990
448 Gln Val Leu Gln Asn Ser Met Ala  Ala Thr Tyr Glu Asp  Arg Gly Pro
449          995                   1000                  1005
452 Ile Gln  Asn Phe Arg Ile Glu  Met Ser Ile Phe Tyr  Ile Val Tyr
453          1010                  1015                  1020
456 Phe Val  Val Phe Pro Phe Phe  Phe Val Asn Ile Phe  Val Ala Leu
457          1025                  1030                  1035
460 Ile Ile  Ile Thr Phe Gln Glu  Gln Gly Glu Ala Glu  Leu Gln Asp .
461          1040                  1045                  1050
464 Gly Glu  Ile Asp Lys Asn Gln  Lys Ser Cys Ile Asp  Phe Thr Ile
465          1055                  1060                  1065
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RAW SEQUENCE LISTING ERROR SUMMARY   DATE: 05/23/2006
PATENT APPLICATION: US/10/534,279   TIME: 14:03:59

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Please Note:
Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220>
to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:19; N Pos. 35
Seq#:21; N Pos. 1
Seq#:22; N Pos. 25,31
Seq#:49; N Pos. 18,24
Seq#:65; N Pos. 27
Seq#:67; N Pos. 20
Seq#:77; N Pos. 15,18

Invalid Line Length:
The rules require that a line not exceed 72 characters in length. This includes spaces.

Seq#:19; Line(s) 3492

Invalid <213> Response:
Use of "Artificial" only as "<213> Organism" response is incomplete,
per 1.823(b) of New Sequence Rules. Valid response is Artificial Sequence.

Seq#:19,20,21,22,23,24,25,26,27,28,29,30,31,32,33,34,35,36,37,38,39,40,41,42
Seq#:43,44,45,46,47,48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63,64,65,66
Seq#:67,68,69,70,71,72,73,74,75,76,77,78,79,80,81,82,83

VERIFICATION SUMMARY
PATENT APPLICATION: **US/10/534,279**

DATE: 05/23/2006
TIME: 14:03:59

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Output Set: **N:\CRF4\05232006\J534279.raw**

L:12 M:270 C: Current Application Number differs, Replaced Current Application No
L:12 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:3492 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:19 after pos.:0
L:3521 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:21 after pos.:0
L:3544 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:22 after pos.:0
L:3898 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:49 after pos.:0
L:4109 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:65 after pos.:0
L:4140 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:67 after pos.:0
L:4276 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:77 after pos.:0